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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,068	08/29/2003	Tawassul Ali Khan		8074

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EXAMINER

TAYLOR, VICTOR J

ART UNIT PAPER NUMBER

2863

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

10/651,068

**Applicant(s)**

KHAN, TAWASSUL ALI

**Examiner**

Victor J. Taylor

**Art Unit**

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 2 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Office Action</u> .                    |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 29 August 2003. These drawings are approved.

### ***Information Disclosure Statement***

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A (1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references, they have not been considered.

### ***Specification***

3. The disclosure is objected to because of the following informalities:

The listing of the references cited in the specification on pages 41-42 is improper. The publications and the US patent listed on page 41-42 must be cited in a proper IDS form and copies of the listed publications provided for examination. Correction to the specification is required to remove the improper listing of these publications. The publications have not been considered in this office action and the copies of each cited publication was not provided. The examiner requests copies of the publications listed on page 41-42. The fax number in the examiners office is (571) 273-2281. Appropriate correction is required.

***Quayle Action***

4. This application is in condition for allowance except for the following formal matters:

I. The listing of references in the specification is improper and pages 41-42 in the specification needs correction with the submission of a proper IDS listing the publications as shown on pages 41-42 of the specification. .

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

***Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

I. Art A of Partyka et al., US 6,131,071 in class 702/016 is cited for the seismic spectral decomposition for seismic interpretation of processing seismic data to provide thin bed tuning effects of later rock discontinuities using source wavelets P1 and reflected wavelets R2 in figure 1-B for spectral decomposition in figure 6 at depth and applies the Gaussian weight function in figure 8 to determine the frequency components in line 2 of column 12.

II. Art B of Sudhakar et al., US 6,055,482 in class 702/016 is cited for the method of seismic signal processing and seismic analysis for identifying subterranean features using a coherence analysis to produce an earth model and determine the litho structure 27 in figure 1 and figure 5 and flattens the prestack migrated gather at the horizon of interest with the curves placed at the same horizontal level in lines 15-40 of column 10.

***Allowable Subject Matter***

6. Claims 1-2 are allowed.

7. The following is an examiner's statement of reasons for allowance:

I. The method of mapping the reservoir rocks found in claim 1 for using the reflected seismic recording to measure the effects of the rocks elastic non-linearity on the seismic reflected signals due to the various physical factors of porosity, fracturing, heterogeneity and pore fluids with the method steps of recording the reflected data by using the seismic detectors and the digitizers with sampling frequencies rates from zero to twice the Nyquist frequency of the highest frequency of the seismic source and with the method steps of preserving the true relative amplitude and with the steps of selecting a time window and analyzing the spectral characteristics with the steps of spectral differencing and with the steps of designing and applying the low and the high pass filters to the seismic data volume with the steps of interpreted the filtered seismic displays with the steps of mapping the seismic and in this combination is not found in the cited art of record.

Art Unit: 2863

The prior Art A of Partyka et al., US 6,131,071 teaches the seismic spectral decomposition for seismic interpretation of processing seismic data to provide thin bed tuning effects of later rock discontinuities using source wavelets P1 and teaches reflected wavelets R2 in figure 1-B for spectral decomposition in figure 6 at depth and teaches the application of the Gaussian weight function in figure 8 to determine the frequency components in line 2 of column 12.

The prior art B of Sudhakar et al., US 6,055,482 teaches the method of seismic signal processing and provides seismic analysis for identifying the subterranean features using a coherence analysis to produce an earth model and teaches a method to determine the litho structure 27 in figure 1 and figure 5 and teaches flattening the prestack migrated gather at the horizon of interest with the seismic curves placed at the same horizontal level in lines 15-40 of column 10.

Therefore, the prior art Partyka et al., and The prior art of Sudhakar et al., in combination or alone does not teach the present limitation of the claimed combination limitation.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

II. The method of locating and confirming the presence of porous and permeable reservoir rocks found in claim 2 by using the low-pass frequency filtered seismic reflected data with the steps of identifying changes in the amplitude and the phase of the reflected data with the steps of calculating the velocity and tortuosity of the reservoir rock combined with the method steps of analyzing and identifying the seismic reflection

Art Unit: 2863

to identify the anomalous artifacts appearing as the time delayed event and based on the measured time delay data to calculate the velocity of the slow wave with the method steps to perform the velocity analysis by using the CDP data to estimate the rock permeability based on the calculated tortuosity method steps and in this combination is not found in the cited art of record.

The prior Art A of Partyka et al., US 6,131,071 teaches the seismic spectral decomposition for seismic interpretation of processing seismic data to provide thin bed tuning effects of later rock discontinuities using source wavelets P1 and teaches reflected wavelets R2 in figure 1-B for spectral decomposition in figure 6 at depth and teaches the application of the Gaussian weight function in figure 8 to determine the frequency components in line 2 of column 12.

The prior art B of Sudhakar et al., US 6,055,482 teaches the method of seismic signal processing and provides seismic analysis for identifying the subterranean features using a coherence analysis to produce an earth model and teaches a method to determine the litho structure 27 in figure 1 and figure 5 and teaches flattening the prestack migrated gather at the horizon of interest with the seismic curves placed at the same horizontal level in lines 15-40 of column 10.

Therefore, the prior art Partyka et al., and The prior art of Sudhakar et al., in combination or alone does not teach the present limitation of the claimed combination limitation.

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes these claims allowable over the prior art.

Art Unit: 2863

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

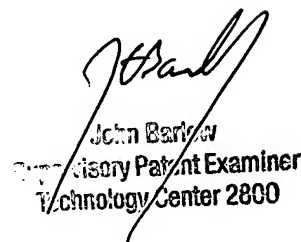
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 517-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VJT

  
10 March 2004

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800